

## ABSTRACT

A method and sytem for achieving carrier frequency synchronization in a high speed receiver. A feedback loop in a carrier recovery system is operated at a down-sampled rate until carrier lock is detected. The output of a phase accumulator, operating at the down-sampled rate, is then extrapolated to provide extrapolated outputs to provide outputs at the original symbol rate. Addresses for a look-up table are then generated from the combined phase accumulator outputs and extrapolated outputs, such that the frequency and phase compensation offsets provided to a phase derotator and slicer are at the original symbol rate. The total pipeline delay as seen by the carrier recovery system is thus reduced. This in turn allows for more efficient correction of residual carrier frequency errors present in a complex baseband signal.